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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,447

06/19/2006

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25944 7590 11/24/2008  
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EXAMINER

KOSLOW, CAROL M

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

11/24/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/583,447	<b>Applicant(s)</b> FURUKAWA ET AL.	
	<b>Examiner</b> C. Melissa Koslow	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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This action is in response to applicants' amendment of 26 September 2008. The amendments to the specification have overcome the objection to the disclosure. The amendments to the claims have overcome the art rejection over claim 10 and the 35 USC 112 rejections. Applicant's arguments with respect to the remaining rejection have been fully considered but they are not persuasive.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/102738 in combination with U.S. patent 6,093,339.

U.S. patent 7,309,450 is the national stage application for WO 02/102738 and thus it is the English translation for WO 02/102738.

WO 02/102738 teaches a piezoelectric ceramic comprising a perovskite oxide having the formula  $(\text{Na}_{1-x-y}\text{K}_x\text{Li}_y)(\text{Nb}_{1-w}\text{Ta}_w)\text{O}_3$ , less than 10 mol% of an alkaline earth titanate and 5.3 mol% or less of a tungsten bronze oxide, where  $0 < x < 1$ , preferably  $x = 0.1-0.9$ ;  $0 \leq y < 1$ , preferably  $0 \leq y < 0.2$  and  $0 \leq w < 1$ . The tungsten bronze has the formula  $\text{M}(\text{Nb}_{1-v}\text{Ta}_v)_2\text{O}_6$ , where M is an alkaline earth and v is 0-1. The reference teaches the ceramic contains at least one sub-component selected from oxides of elements of Group 3 to Group 12 of the Periodic Table, such as MnO and combinations of MnO and at least one of oxides of Fe, Co, Ni and Zn, where the amount of each subcomponent is 0.01-1 wt%. This reference suggests all the claimed limitations except it teaches an alkaline earth titanate instead of the claimed alkaline earth zirconate. The amounts all overlap and/or fall within those claimed. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re*

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*Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). Also see MPEP 2144.05. U.S. patent 6,093,339 teaches a piezoelectric ceramic comprising a perovskite oxide having the formula  $(\text{Na}_{1-x-y}\text{K}_x\text{Li}_y)(\text{Nb}_{1-w}\text{Ta}_w)\text{O}_3$  and 10 mol% or less of a perovskite oxide having the formula  $\text{MQO}_3$ , where M is an alkaline earth element and Q is Ti, Zr, Sn or Hf. The examples show that there is not much difference in the properties of the ceramic containing a titanate and one containing a zirconate. Thus it appears that in niobate based piezoelectric ceramics, alkaline earth titanates and zirconates are functionally equivalent. Therefore one of ordinary skill in the art would have found it obvious to replace the taught alkaline earth titanates in the ceramic of WO 02/102738 with an alkaline earth zirconate because the substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art at the time of invention. The references suggest the claimed ceramic.

Applicants argue the amount of displacement achieved in a perovskite oxide having the formula  $(\text{Na}_{1-x-y}\text{K}_x\text{Li}_y)(\text{Nb}_{1-w}\text{Ta}_w)\text{O}_3$ , less than 10 mol% of an alkaline earth zirconate and 5.3 mol% or less of a tungsten bronze oxide is greater than that of a perovskite oxide having the formula  $(\text{Na}_{1-x-y}\text{K}_x\text{Li}_y)(\text{Nb}_{1-w}\text{Ta}_w)\text{O}_3$ , less than 10 mol% of an alkaline earth titanate and 5.3 mol% or less of a tungsten bronze oxide and points to the supplied tables. While the tables do show an increased displacement, they do not show that such an increase is unexpected. One of ordinary skill in the art would expect some difference in properties since the properties of alkaline earth titanates and alkaline earth zirconates are not identical. The difference in displacement shown by the table is on the order of 5% or less. The difference between those compounds without the titanate or zirconate and those that contain them is 6% and greater. Thus

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there is no showing that the suggested replacement of alkaline earth titanates with alkaline earth zirconates in the ceramics of WO 02/102738 lead to unexpected properties and thus would not be obvious to one of ordinary skill in the art. The rejection is maintained.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/cmk/  
November 24, 2008

/C. Melissa Koslow/  
Primary Examiner  
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